FORE
SYSTEMS®

ForeThought 4.3

for IRIX and Solaris

Release Notes

Software Version 4.3

Legal Notices

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1.0 General Description of Software Release

These release notes highlight the features in the *ForeThought* software version 4.3 release for IRIX and Solaris systems.

2.0 System Requirements

- When using LAN emulation, the *ForeThought* 4.3 adapter software requires that *ForeThought* 4.1 or later software also be running on the switch or Solaris workstation in your network that is providing the LAN Emulation Services.

2.1 IRIX

Software: Requires IRIX 6.3, or 6.4

NICs supported: PCA-200EUX

2.2 Solaris

Software: Requires Solaris 2.5 or 2.6

NICs supported: PCA-200EUX, SBA-200E

3.0 Improvements

3.1 Performance Enhancements

3.1.1 IRIX 6.4 Support

- Added support for IRIX 6.4 running on Octane, Origin200, and Origin2000 systems.

3.1.2 XTI Support

This release contains support for the ATM extensions to the XTI programming interface, as described in X/Open's XNS Specification, Issue 5. This document may be ordered on-line, using the following URL:

```
http://www.opengroup.org/public/pubs/catalog/c523.htm
```

This release differs from the XNS Issue 5 spec. in the following ways:

- No point-to-multipoint support. The spec. requires the OS to provide a new event type for PMP support. No OS has added support for this event yet.
- We provide PVC extensions to the XTI interface (the XNS spec. makes no mention of PVC support). Refer to the PVC example code for samples of how to utilize these extensions.
- The X/Socket feature of the XTI API is not supported in this release.

3.1.3   XTI Contents

This release provides sample code, header files, and a library which provides simplistic ATM name resolution. There is no separate library for XTI support, this is integrated in the ATM driver.

A. Header Files

The header files follow the naming convention specified in the XNS spec. They are installed in

<FORE install dir>/**include/fore_xti/**.

The reason for the additional level of indirection (the **fore_xti** directory) is to avoid confusion with vendor-supplied versions of these files, as they become available. FORE recommends using the **include** path: *<FORE install dir>*/**include/**.

Using this path, programs then include files as:

#include <fore_xti/xti.h>

which helps avoid confusion with OS-supplied files of the same name.

B. Device Names

This installation creates two new devices, **/dev/xtisvc0** and **/dev/xtipvc0**. Use these device names to create ATM XTI endpoints (see the sample code for examples).

C. ANS Library

This release includes a library, contained in *<FORE install dir>*/**lib/libans.a**

which provides simple file-based name resolution for XTI applications. This library reads a file, **/etc/xti_hosts**, which contains pairs of ATM addresses and host names, e.g.,

47.0005.80.ffe100.0000.f21a.2a2a.002048062fc2.00 thurston

> **NOTE** ➤ The separating periods are optional.

Refer to the SVC sample code, and to the file:

<FORE install dir>/**include/fore_xti/fore_ans.h** for more details on using this feature.

4.0 Known Issues or Concerns

4.1 All Platforms

1. When running *ForeThought* 4.0.2 LECs with *ForeThought* 4.1 or later LANE services, the *ForeThought* 4.1 (or later) LES MTU size for the ELAN that the *ForeThought* 4.0.2 LEC joins must be set to **1516** to ensure proper data transfer.

2. The XTI error codes returned do not match the TLI codes mentioned in the XNS Issue 5 spec, but rather, correspond to **/usr/include/sys/errno.h** error codes.

3. **t_getname()**, an "unintentionally undocumented" routine in TLI, will not work for applications compiled as 64-bit on Irix 6.4 systems. 32-bit calls to **t_getname()** on Irix 6.4 systems will work correctly. (**t_getname()** will work properly on Solaris and Irix 6.3 systems.)

4. There is a known bug that will cause **t_open()** to fail for PVC endpoints after opening approximately 60 PVC endpoints. Please contact TAC if you encounter this problem.

5. Due to limitations in the adapter card firmware, only 3 rate-shaped VCs can be in use at the same time. It is strongly recommended that specifying rates less than 1 Mb/s be avoided.

4.2   IRIX

4.2.1   Documentation

In the *ForeRunner PCA-200EUX ATM PCI Bus Adapter for IRIX User's Manual* (MANU0206-01, dated April, 1997) make the following corrections:

1. Change *ForeThought* 4.1 to *ForeThought* 4.3 throughout the manual.

2. Change IRIX 6.3 to IRIX 6.3/6.4 throughout the manual.

3. In paragraph 1.6.1 *PCA-200EUX Supported Platforms*, add the following platforms:

    •Silicon Graphics, Inc. Octane Workstation

    •Silicon Graphics, Inc. Origin200 systems

    •Silicon Graphics, Inc. Origin2000 systems

4. When running **fore_install** on IRIX 6.3/6.4 systems, the console output shown on page 3-5 will appear similar to the following:

```
Copyright (c) 1995-1997 FORE Systems, Inc. All rights reserved.
Release: A_ForeThought_4.3.0
************************************************************
****                                               ****
**** FORE Systems ATM adapter IRIX System Installation ****
****                                               ****
************************************************************


In order to properly install this distribution, the following

conditions must be true:

    1. You must run this program as root.

    2. You must have approximately 11MB of free disk space

       in the destination directory to hold the new distribution.

    3. You must have approximately 8MB of free disk space in

       the root directory for the installation of a new kernel.

Are all three conditions true? y<ENTER>

Enter the name for the FORE ATM interfaces [fa]: <ENTER>

The interfaces will be called fa.

Installing PCA-200E software on Octane (IP30) System

Continue? [y] <ENTER>

Installing kernel configuration files for the PCA-200

Ready ? [y] <ENTER>
```

CAUTION

⚠

If you plan to use 2 or more adapters in a system that has *less* than 128 MB of RAM, please read carefully and follow the instructions in **/var/sysgen/master.d/fore_atm_** *after* **fore_install** is run and *before* rebooting. After making any relevant changes, run **autoconfig   -vf** again to generate a new kernel and *then* reboot. Failure to do so will result in the system running out of mbufs on bootup which will make remote sessions extremely difficult.

4.2.2   Software

1. While using load balancing with multiple adapters, network connections may be lost if the interface through which the route exists for the network is configured down (e.g. via the command **ifconfig fa0 down**). In such cases, manually deleting the existing route (e.g., **route delete** *<net> <gateway>*) from the routing table and manually adding a route via another interface (e.g **route add** *<net> <gateway>*) will restore connectivity. This may be done as follows (assuming that it is **fa0** that has been configured down):

    a. Remove the existing route to the **fa0** interface by entering the following command:

        route delete net *<destination ip subnet> <fa0 ip address>*

    b. Change the IP address of the **fa0** interface by entering the following command:

        ifconfig fa0 *<ip address>*

    where *<ip address>* is an address not already used by **fa1**, **fa2**, or **fa3**. This ensures that the routing software does not pick up the **fa0** interface again when the next step is performed.

    c. Add a new route pointing to **fa1**, **fa2**, or **fa3** by entering the following command:

    route add net *<destination ip subnet> <faX ip address>* **-interface**

    where *faX* is either **fa1**, **fa2**, or **fa3**.

    > **NOTE**   Be sure to include the **-interface** option.

2. Heavy UDP/IP stress - testing with lots of IP fragmentation may make IRIX systems unstable (panic, losing yp services, consoles freezing, etc). This is especially true on low memory machines (e.g 64 MB). The latest version of the networking roll-up patch from SGI is required and will help in stabilizing the problem. Please contact FORE Technical Support if you think you have this problem.

3. An Origin200 may panic under UDP/IP stress.

4. Under NFS stress, Origin200 and Octane systems may lose interrupts, causing the ATM adapter to appear to "hang."

4.3   Solaris

4.3.1   Documentation

The following procedure assumes that you have already acquired the distribution tar file containing the *ForeThought 4.3* software for your SBA or PCA adapter.

1. Create a directory: e.g, **/usr/fore** and copy the appropriate tar file for the Solaris driver (e.g., **sunos5_pca_4.3.0.tar**) into it. If **/usr/fore** already exists, you should remove all of its contents prior to copying the new tar file into it.

2. Make the directory created in step 1 current and then enter the following command:

        tar xvf *file_name*

where *file_name* is the name of the Solaris driver file that you copied in step 1.

4. Begin the FOREatm software installation process by entering the following command:

        pkgadd -d *directory_name* **FOREatm**

where *directory_name* is the name of the directory created in step 2. Output similar to the following appears:

```
Processing package instance <FOREatm> from <directory_name/sun/sunos5/>
ForeThought ATM Software
(sparc) 4.1
* Copyright (c) 1997 FORE Systems, Inc., as an unpublished work.  This
* notice does not imply unrestricted or public access to these
* materials which are a trade secret of FORE Systems, Inc. or its
* subsidiaries or affiliates (together referred to as "FORE"), and
* which may not be reproduced, used, sold or transferred to any third
* party without FORE's prior written consent.
*
* All rights reserved.
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* U.S. Government Restricted Rights.  If you are licensing the Software
* on behalf of the U.S. Government ("Government"), the following
* provisions apply to you.  If the Software is supplied to the
* Department of Defense ("DoD"), is classified as "Commercial Computer
* Software" under paragraph .227-7014 of the DoD Supplement to the
* Federal Acquisition Regulations ("DFARS") (or any successor
* regulations) and the Government is acquiring only the license rights
* granted herein (the license rights customarily provided to non-
* Government users).  If the Software is supplied to any unit or
* agency of the Government other than DoD, it is classified as
* Restricted Computer Software" and the Government's rights in the
* Software are defined in paragraph 52.227-19 of the Federal
* Acquisition Regulations ("FAR") (or any successor regulations) or, in
* the cases of NASA, in paragraph 18.52.227-86 of the NASA Supplement
* to the FAR (or any successor regulations).
```

```
Enter the name for the FORE ATM interfaces [fa]: <ENTER>
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
   5 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.

The following files are already installed on the system and are being
used by another package:
* /etc/fore <attribute change only>
* /etc/fore/atmarp
* /etc/fore/atmconfig
* /etc/fore/elconfig
* /etc/fore/fore_expr
* /etc/fore/lane
* /etc/fore/le
* /etc/fore/lecs
* /etc/fore/ncomm
* /etc/fore/sba200.bin1
* /etc/fore/sba200.bin2
* /etc/fore/sba200e.bin1
* /etc/fore/sba200e.bin2
* /etc/fore/snmpd
* /kernel/drv/fore_atm


* - conflict with a file which does not belong to any package.


Do you want to install these conflicting files [y,n,?,q]y<ENTER>
```

A list of files scrolls by as the FORE ATM software is installed, followed by:

```
## Checking for setuid/setgid programs.
The following files are being installed with setuid and/or setgid
permissions:
 /etc/fore/atmarp <setgid sys>
 /etc/fore/elconfig <setgid sys>
 /opt/FOREatm/bin/elarp <setgid sys>
Do you want to install these as setuid/setgid files [y,n,?,q] y<ENTER>


This package contains scripts which will be executed with super-user
permission during the process of installing this package.


Do you want to continue with the installation of <FOREatm> [y,n,?] y<ENTER>


Installing ForeThought ATM Software as <FOREatm>


## Installing part 1 of 1.


## Executing postinstall script.


The ForeThought ATM Software has been successfully installed.
The system must be rebooted for the software to become operational.


The software must be reconfigured before rebooting by executing
/opt/FOREatm/bin/configure_atm.


Installation of <FOREatm> was successful.
```

NOTE ►
When done installing on a system with an **SBA** adapter, remove the directory where the *ForeThought 4.1* general utilities were kept (e.g., **/usr/local/bin**). Also. reset the path to the newly-installed utilities to **/opt/FOREatm/bin**. The installation process will clean up all other files.

To begin the configuration session, enter the following command:

/opt/FOREatm/bin/configure_atm

Continue with the configuration session as shown in Chapter 3 of your SBA-200E or PCA-200EUX User's Manual.

4.3.2   Software

1. To support MTU sizes larger than the normal 9180, edit your **/etc/system** file by inserting an entry of the form:

    set fore_atm:fore_classical_mtu = *<value>*

    where *<value>* is the desired MTU size (e.g., 65535). This matter is also explained in the **atmconfig** man page.

    Do not set the MTU size for the classical IP interface to a value greater than or equal to 65527. The driver does not range-check for values greater than or equal to 65527

2. Do not start **rarpd** with the **-a** option. Instead, specify the interface on which to start. Interfaces created by FT 4.1 drivers do not support **rarpd** (Reverse Address Resolution Protocol). Generally, this daemon is started with the **-a** (all) option. For example, when the daemon tries to start **rarp** on the fa0 interface, it binds an SAP, but fails to successfully start **rarp**. Subsequently, this SAP is not released and so cannot be reused and will result in an error when another program tries to use this SAP.

    Generally, the scripts are written such that the presence of a **/tftpboot** directory triggers the **rarpd -a**. If the host does have one such directory, then during boot time you might see a **DL_BIND_REQ** failed message in the **syslog** or **/var/adm/message** file since **rarpd** was trying to bind all the ATM interfaces (fa0, qaa0, qaa1 and so on) to the same SAP. To avoid this, you need to modify the boot-time script files (usually **/etc/rc2.d/S15nfs.server** on Solaris) so as to start **rarpd** only on the ethernet interface (le0) or other interfaces where this protocol is supported.

3. The FORE API libraries are not multi-thread safe. Do not attempt to use them in multi-thread environments.

4. When running **atmdiag** on an SBA-200E, do not run the Slave Access Test (memory test).

5.0 Contacting Technical Support

In the U.S.A., you can contact FORE Systems' Technical Support by any one of four methods:

1. If you have access to the Internet, you may contact FORE Systems' Technical Support via e-mail at the following address:

   support@fore.com

2. You may FAX your questions to "support" at:

   412-933-3416

3. You may send questions, via U.S. Mail, to the following address:

   FORE Systems, Inc.
   1000 FORE Drive
   Warrendale, PA 15086

4. You may telephone your questions to "support" at:

   800-671-FORE or **412-635-3700**

Technical support for non-U.S.A. customers should be handled through your local distributor.

No matter which method is used for technical support, please be prepared to provide the serial number(s) of the product(s) and as much information as possible describing your problem or question.